Principles of Prescription Writing and Other Pharmacotherapeutic Considerations

**KEY TERMS**

- **Compliant patient:** A patient who follows the written orders on a prescription as instructed
- **Doseform:** The manner in which the drug formulation is supplied (capsules, tablets, mouth rinse, etc.)
- **Rx:** Latin symbol for “take thou,” placed in the body of the prescription

**KEY ACRONYMS**

- **BSA:** Body surface area
- **DEA:** Drug Enforcement Administration
- **RDH:** Registered dental hygienist

The essence of good prescription writing is to ensure that the pharmacist knows exactly which drug formulation and dosage to dispense, and the patient has explicit written instructions for self-administration of the prescribed drug. A prescription is a legal document that carries regulations to ensure safe use and to comply with governmental regulations. Dental hygienists may be asked to participate in the prescription-writing process in a variety of ways.

**PRESCRIPTION WRITING AND PRESCRIPTION FOR A CONTROLLED SUBSTANCE**

A prescription is a legal document for which the prescriber and pharmacist are both responsible. Prescriptions are regulated by state and federal laws and must be properly written, with specific information included. Online prescribing is currently available, and the same legal requirements must be met for it as for written prescriptions. Other requirements, such as an insurance company’s approved list of covered drug products, may be important to consider when prescriptions are written. This can help the patient avoid having to pay for a drug not included in his or her benefit plan. Many insurance-approved drug plans cover specific branded products, while the same drugs with different brand names may not be covered. Errors in prescribing drugs can occur from a variety of reasons, some of which include:

- wrong dose, such as incorrect calculation of a pediatric dose;
- prescription written for a patient whose medical condition creates a contraindication for taking the drug;
- poor handwriting, making the information unclear to the pharmacist;
- incorrect information written from memory, rather than from a reviewed drug reference;
- look-alike drug names that may be confused at the pharmacy.

**Rules for Prescription Writing**

The following prescription-writing guidelines have been developed to comply with state and federal laws, avoid errors when the prescription is prepared, and prevent misuse of prescription information:
the patient information (name, age and weight [for children], and address), exhibits the date of the prescription, and lists the patient information (name, age and weight [for children], and address). For children, the age and weight should be noted so the pharmacist can monitor the dose prescribed, as a double check to reduce possible errors in prescribing. The prescriber’s name and address may be printed on the pad to reduce time when the prescription is written. When a dental practice includes more than one dentist, the names of all dentists in the group may be printed on the pad. In this situation, the name of the appropriate prescriber should be circled when the prescription is written. The telephone number of the prescriber is a convenience to the pharmacist in case clarification of information is needed. The date on which the prescription was written and signed is required when substitution of information is needed. The date on which the prescription will have expired. Prescription pads with printed heading information must be kept secure at the dental office so they will not be stolen and used for fraudulent prescription writing.

**Parts of the Prescription**

In the past, several Latin terms were used to describe parts of the prescription, including superscription (which included the abbreviation Rx, meaning “take thou”), inscription (information about the drug, dose, and doseform), subscription (information to the pharmacist about filling the inscription), and transcription (directions to the patient for taking the drug). However, these terms have been replaced by a more concise, three-part description of the prescription: a heading, a body, and a closing (Fig. 3-1).

**Heading**

The heading identifies the prescriber (name, phone number, and address), exhibits the date of the prescription, and lists the patient information (name, age and weight [for children], phone number, DEA number, and a record of drugs prescribed). Blank prescription sheets should not have the name of a pharmacy or pharmaceutical company imprinted on the forms, to avoid the appearance of product endorsement. Prescriptions for Schedule II controlled substances must be written in ink, indelible pencil, or typewritten. Written prescriptions should be legible, accurate, include complete information, and be written in ink. Chapter 1 includes sources for drug information.

**Body**

The body tells the pharmacist the specific drug, dose or concentration, and amount to be dispensed. It also provides directions to the patient (transcribed by the pharmacist to the packaged drug) that state precisely how the patient is to self-administer the drug. Some drug products are not available in the doseform needed and must be mixed by a pharmacist trained to mix or compound the product. A good example is a compounded mouth rinse called Miracle Mix that dentists often prescribe for severe oral ulceration. This rinse contains several ingredients to cover ulcers and reduce pain and inflammation. This product is fully described in Chapter 22.

**Closing**

The closing provides a space for the signature of the prescriber, the prescriber’s U.S. DEA number (if applicable), instructions to the pharmacist about product selection, and a closing (Fig. 3-1).
The longer the duration of treatment, the more patient compliance diminishes. This is especially true if symptoms are relieved before drug therapy is discontinued. Additionally, noncompliance can result if the regimen itself is discouraging or confusing to the patient because of the number of doses dispensed, and the strength of the doseform. A clearly written label could be important in an emergency situation if the patient were unable to provide information. The pharmacy name, address, phone number, date the prescription was filled, and instructions regarding refills should be on the label. For refill prescriptions, both the date of the original prescription and the date of the next refill should be on the label. This information is useful when a patient is taking medication with a short shelf life. For example, nitroglycerin tablets are to be placed sublingually (under the tongue) to relieve anginal pain. This medication usually has a 3- to 6-month shelf life. The dental hygienist can determine that a prescription is not outdated (and therefore ineffective for the relief of angina) by looking at the refill information that should be on the label. The label also should include directions to the patient on how to take the medication (“Place one tab under the tongue as needed for pain”) and any warnings (“Use no more than three tabs”).

Counseling for a Prescription

It is estimated that 25% to 60% of patients who receive a prescription for medication do not get the prescription filled or do not take the medication as prescribed. Other noncompliance issues may include:

- taking the drug at inappropriate times, such as taking at or before meals when food can prevent absorption of the drug;
- stopping medication too soon and not taking the full course of the drug;
- getting the prescription filled, but never taking the drug.

The reasons behind these noncompliance issues possibly can be avoided with proper counseling and explanations related to:

- why the drug is needed;
- what can occur if the drug is not taken;
- clear instructions for when to take the drug (including factors that can cause the drug to be ineffective);
- possible side effects that can occur and how to manage them;
- situations that require notification of the dentist, such as burning mouth, bloody diarrhea, hives or evidence of allergic reactions, and so forth.

Role of the Registered Dental Hygienist

Although dental hygienists do not prescribe drugs, knowledge regarding appropriate drugs to prescribe for various
indicateations and properly prepared prescriptions is necessary for several reasons.

**Antibiotic Prophylaxis**

Occasionally a prescription is provided to the dental patient with instructions to take the medication prior to the appointment. When a prescription has been prepared, the treatment record should include information on the drug prescribed and the specific patient instructions related to the dental appointment. In this situation, the receptionist may have reminded the patient to take the drug when the appointment was verified. However, it is the responsibility of the practitioner to review the treatment record and medical history to verify that the instructions were followed. In other situations, another prescriber may have prepared the prescription. Questioning should include determining compliance in taking the medication according to the most current recommendation for the indication. For example, antibiotic prophylaxis is ordered prior to oral prophylaxis for a patient at high risk for bacterial endocarditis. When the patient arrives for the appointment, the registered dental hygienist (RDH) must ask:

- When was the antibiotic taken? (Was it 1/2 to 1 hour prior to the appointment?)
- Which specific antibiotic was prescribed? (The dose of the antibiotic depends on the specific product prescribed.)
- How much was taken? (Was the correct dose taken?)
- Have any adverse effects developed? (Look for signs of allergy—hives, rash, breathing difficulties—and report signs to the dentist.)

The answers to these questions should be recorded in the treatment record. An example might read as follows: “Four 500-mg tabs amoxicillin taken at 8:00 AM, 1 hour prior to appointment, no complications.” Proper documentation in the treatment record of prescriptions written for the dental appointment is essential for medicolegal reasons, as well.

**Medication for Emergency Use**

Occasionally a medication needs to be available to use if an emergency situation occurs. Two common medications that patients always should bring to each dental appointment are nitroglycerin tablets at all times, in case of an acute episode of chest pain. When the bottle is produced, the RDH should examine the label to determine the date the prescription was filled and the date of the next refill. This procedure is necessary to ensure that the nitroglycerin is still active and able to reduce anginal pain. Other responsibilities of the RDH related to prescription writing might include the following:

- A review of the prescription for necessary information prior to the patient’s leaving the office
- Discussion with the patient regarding instructions on how to take the medication

These strategies may help prevent delays at the pharmacy if information is missing or unclear.

**Self-Study Review**

1. List rules for prescription writing. Which prescriptions require a written order? Which type(s) of prescription must be written in ink? Which can be called in? In what location should printed prescription pads be kept? How does the dentist know which prescriptions have been written for a patient? Which type of prescription is required by law to be signed by the prescriber?
2. Describe information included in the three parts of a prescription. What does the symbol Rx mean?
3. What information should be included on the prescription label? How could this information be used during a dental hygiene appointment? How can one determine if a prescription is past its expiration date?
4. Write out the information to be included in the treatment record when a patient must take amoxicillin prior to the maintenance appointment as a strategy to prevent bacterial endocarditis.
5. What are strategies in the dental office to ensure a properly written prescription has been given to the dental patient?
6. What is the main factor for noncompliance regarding therapeutic medications in an adult? In a child?
7. Describe five principles to include when counseling a patient about a prescription.
8. What questions should be asked when a drug for antibiotic prophylaxis has been prescribed?

**METRIC AND HOUSEHOLD MEASURES**

The metric system is the language of scientific measurement and should always be used in prescription writing (Table 3-1). Solid drugs are dispensed by weight (mg), and liquid drugs by volume (mL). Although the clinician will direct the pharmacist to dispense a liquid preparation in milliliters (mL), it is generally necessary to convert this dosage to a convenient household measurement in directions to the patient. When greater accuracy is required, the patient may need to use a graduated cylinder or a calibrated dropper to dispense the medication properly.

**ABBREVIATIONS**

In the past, directions to the patient were written using Latin abbreviations to save time when the prescription was written. Abbreviations are also used in prescription writing to make
A variety of formulas are used to calculate pediatric dosage in a prescription. The two most common methods of calculating pediatric medications use body weight and body surface area (BSA). The most accurate method for determining the dosage for a child is to use the BSA. The body surface is a function of the height and weight of the child. Tables are available to calculate the surface area and the appropriate dosage (Fig. 3-2). When pediatric dosages are available from the manufacturer, it is best to use the manufacturer’s recommendation.

**Table 3-1** Metric and Household Measures

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>kilogram</td>
<td>1 kg = 1,000 g</td>
</tr>
<tr>
<td>gram</td>
<td>1 g = 1,000 mg</td>
</tr>
<tr>
<td>milligram</td>
<td>1 mg = 1/1,000 g</td>
</tr>
<tr>
<td>pound</td>
<td>1 lb = 2.2 kg</td>
</tr>
<tr>
<td>grain</td>
<td>1 gr = 65 mg</td>
</tr>
</tbody>
</table>

When reading children’s dosage information, the source may refer to milligrams (mg) of drug per kilogram (kg) of body weight. The American Heart Association’s recommendation for antibiotic prophylaxis to prevent infective endocarditis in the child is to use 50 mg of amoxicillin per kilogram of body weight. Table 3-1 illustrates that 1 kg equals 2.2 lb. To determine the dose of amoxicillin for antibiotic prophylaxis in a 50-lb child, divide 50 lb by 2.2 to determine the number of kilograms, then multiply that number (22.7 kg) by 50 mg to get the milligram dose (1,150 mg) of amoxicillin. Amoxicillin comes in 250-mg and 500-mg tablets. Rounding the dose down to 1 g (1,000 mg) yields instructions that the child should take two 500-mg tablets 30 minutes to 1 hour prior to the appointment. When the child dosage is not specified by the manufacturer, there are several rules for calculating it. These include Young’s rule, which uses age for dose calculation, and Clark’s rule, which uses the child’s weight. Box 3-2 illustrates rules for calculating children’s dosage. Weight is the usual basis for determining the dose, but weight can vary in children of the same age. For this reason, the BSA rule is considered the most accurate. Some pediatric medications specify dosages in milligrams or units per square meter (m²). If the child’s BSA is known, the practitioner will multiply the recommended dosage by the BSA. The BSA is determined by plotting a child’s height and weight on a graph called a

![Figure 3-2 West’s Nomogram for Body Surface Area](image-url)
as mentioned earlier, substances listed in Schedule I are not
tificate of registration also authorizes clinicians to prescribe
indicated on all prescription orders for controlled substances
five schedules, then the clinician must register each loca-
ences controlled substances must be registered with the
control of the drug. Schedule I (C-I) drugs have the highest
potential of the drug. Schedule I drugs cannot be prescribed and
potential for abuse. Schedule I drugs are used for drug research purposes only. Special permission from the DEA is necessary before Schedule I drugs can be obtained for research purposes. Table 3-3 lists the schedules, describes rules for prescribing drugs in the specific schedules, and provides examples of drugs in the schedules.

**Rules for Prescribing Scheduled Drugs**

All prescription orders for controlled substances
- must be written in ink or typewritten;
- must bear the full name and address of the patient;
- must list the full name, address, and DEA registration num-
- must be dated;
- must be manually signed by the practitioner.

**Responsibilities of the Practitioner**

When prescribing a controlled substance, the clinician must write the actual amount, in addition to giving an Ara-

nomogram (Fig. 3-2). For example, West’s nomogram has three vertical lines with numbers. Vertical line 1 represents height in centimeters or inches, vertical line 2 represents the surface area (SA) in square meters, and vertical line 3 represents weight in kilograms or pounds. Plot the child’s height and weight on the nomogram and draw a line between the two points. The point where this line intersects the SA column is the child’s BSA. For example, based on any combination of a child’s weight and height, if the BSA is 0.59 m², and the recommended dose of a drug is 10 mg/m², the appropriate dose for the child would be 5.9 mg. Because the BSA is the most accurate method for determining the dosage for a child, the BSA is most frequently used to calculate anticancer drug dosages.

**REGULATIONS FOR PRESCRIBING CONTROLLED SUBSTANCES**

Over the years, Congress has enacted more than 50 pieces of legislation related to drug control. The Controlled Substances Act of 1970 (CSA) collects and conforms most of these diverse laws into one piece of legislation. The act is designed to improve the administration and regulation of manufacture, distributing, and dispensing of controlled drugs, and to provide a “closed” system for the legitimate handlers of controlled substances. Individual states or local governments may enact additional requirements concerning controlled substances. Whenever state and federal laws differ, the more stringent law must be followed.

Every practitioner who administers, prescribes, or dispenses controlled substances must be registered with the DEA’s Registration Unit. If a clinician has more than one office from which he or she prescribes drugs listed in the five schedules, then the clinician must register each location. The number on the certificate of registration must be indicated on all prescription orders for controlled substances and must correspond to the specific office location. A certi-
ficate of registration also authorizes clinicians to prescribe controlled substances from specific schedules. For example, as mentioned earlier, substances listed in Schedule I are not for prescription use, but they may be obtained for research and instructional use or for chemical analysis by application to the DEA, supported by a protocol for the proposed use. A clinician with a DEA number is not authorized to prescribe Schedule I drugs. Similarly, if a clinician sees no reason to prescribe Schedule II drugs at a particular office location, a request can be made for a DEA registration number that only authorizes the prescription of drugs in Schedule III, IV, and/or V. The DEA has created a Web site where application forms can be found, as well as laws dealing with controlled sub-
stances (www.deadiversion.usdoj.gov). The attorney general has the authority to deny an application for registration if it is determined that the issuance of such registration would be inconsistent with the public interest. In determining the approval or denial of an application for a DEA number, the following factors are considered:

- The recommendation of the appropriate state licensing board or professional disciplinary authority
- The applicant’s experience in dispensing or conducting re-
search with respect to controlled substances
- The applicant’s conviction record under federal or state laws relating to the manufacturing, distributing, or dispensing of controlled substances

A practitioner who does not follow the laws regulating pre-
scribing controlled substances can lose the authority to write prescriptions for scheduled drugs.
sequent amendments consolidate Canada’s drug control pol-
icies. It provides (a) a framework for the control and use of
substances that can alter mental processes and that may pro-
duce harm to health and to society when distributed or used
without supervision; (b) mechanisms to ensure that regulated
substances are confined to medical, scientific, and industrial
purposes; and (c) enforcement measures available to police
to the courts for the interdiction and suppression of un-
lawful distribution of controlled substances. Practitioners—
defined by the act as “those registered and entitled under
the law of a province to practice in that province the profes-
sion of medicine, dentistry, or veterinary medicine”—may
prescribe controlled substances for medical purposes in ac-
cordance with the various provincial mandates. Controlled
substances are identified in six schedules, not in five sched-
ules as in the United States. Schedules are I, II, III, IV, V, and
VI, and the drugs are placed in schedules according to their
perceived abuse potential determined by Canadian author-
ities. Table 3-4 illustrates the Canadian controlled substances
schedules.

### Canadian Drug Schedules

The Controlled Drugs and Substances Act (1996) and sub-
sequent amendments consolidate Canada’s drug control pol-

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Description</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule I (C-I)</td>
<td>C-I drugs have no legal medical use in the United States and have a high abuse potential. They may be used for research purposes and must be obtained from governmental agencies.</td>
<td>halucinogens (LSD)</td>
</tr>
<tr>
<td>Schedule II (C-II)</td>
<td>C-II drugs have legal medical uses in the United States, but they have a high abuse potential, which may lead to severe psychologic and/or physical dependence. A written prescription order is required for C-II drugs. Refilling C-II prescription orders is prohibited. In the case of a bona fide emergency, a practitioner may telephone a prescription order to a pharmacist. In such a case, the drug prescribed must be limited to the amount needed to treat the patient during the emergency period. Such oral orders must be followed up by written orders within 72 hours.</td>
<td>amphetamines</td>
</tr>
<tr>
<td>Schedule III (C-III)</td>
<td>C-III drugs have legal medical uses in the United States and a moderate abuse potential, which may lead to moderate psychologic and/or physical dependence. A prescription order for C-III drugs may be issued either orally or in writing to the pharmacist, and it may be refilled up to 5 times within 6 months after the date of issue, if so authorized on the prescription. After 5 refills or after 6 months, a new oral or written prescription is required.</td>
<td>anabolic steroids</td>
</tr>
<tr>
<td>Schedule IV (C-IV)</td>
<td>C-IV drugs have legal medical uses in the United States and a low abuse potential, which may lead to moderate psychologic and/or physical dependence. A prescription order for C-IV drugs may be issued either orally or in writing to the pharmacist, and it may be refilled up to 5 times within 6 months after the date of issue, if so authorized on the prescription. After 5 refills or after 6 months, a new oral or written prescription is required.</td>
<td>benzodiazepines (diazepam [Valium])</td>
</tr>
<tr>
<td>Schedule V (C-V)</td>
<td>C-V drugs have legal medical uses in the United States and a low abuse potential, which may lead to moderate psychologic and/or physical dependence. A prescription order for C-V drugs may be issued either orally or in writing to the pharmacist, and may be refilled if so authorized on the prescription. Some states allow C-V products to be sold over-the-counter (OTC) provided they are dispensed by a pharmacist and the patient is at least 18 years of age. A record of the transaction must be kept by the practitioner if permitted by law.</td>
<td>selected opiates (propoxyphene [Darvon])</td>
</tr>
</tbody>
</table>

### Table 3-3 Drug Schedules

who self diagnose and self prescribe (“I have an abscessed
tooth, and the only drug that helps my pain is oxycodone.”),
and they should be alert to a series of “new” patients all com-
plaining of similar symptoms. Once a substance abuser is
successful in getting a prescription for a controlled substance
by self diagnosing and self prescribing, the only drug that helps their pain is oxycodone.

**Triplicate Prescription Blanks**

Some states require triplicate prescription forms when Sched-
ule II drugs are prescribed. The state supplies blanks upon
request from the dentist. Blanks are numbered consecutively
as a measure to provide additional control of the prescription
blanks. After a prescription is written, one copy is placed in
the dentist’s records and the other two copies are provided to
the patient. These two copies then are given to the pharma-
cist, who keeps one copy and sends the other copy to the state
regulatory agency. Triplicate form pads should be kept in a
secure place to prevent them from being stolen. When these
forms are misplaced or stolen, the appropriate state agency
must be notified immediately.

### Canadian Drug Schedules

The Controlled Drugs and Substances Act (1996) and sub-
sequent amendments consolidate Canada’s drug control pol-

9. Identify the U.S. agency that governs prescriptions
controlled substances.
Table 3-4  Canadian Controlled Substance Schedules

<table>
<thead>
<tr>
<th>Schedules</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Schedule I | 1. Opium poppy, its preparations, derivatives, alkaloids and salts  
   a. Morphine and congeners  
   b. Codeine and congeners  
   2. Fentanyl derivatives, their salts, and analogues  
   a. Fentanyl |
| Schedule II | 1. Cannabis, its preparations, derivatives, and similar synthetic preparations  
   a. Marijuana |
| Schedule III | 1. Amphetamines, their salts, derivatives, isomers, and analogues, and salts of derivatives, isomers, and analogues  
   a. Amphetamine |
| Schedule IV | 1. Barbiturates, their salts, and derivatives  
   a. Barbitual  
   b. Pentobarbital  
   c. Secobarbital  
   2. Benzodiazepines, their salts, and derivatives  
   a. Alprazolam  
   b. Diazepam  
   c. Lorazepam |
| Schedule V | 1. Phenylpropanolamine |
| Schedule VI | 1. Ephedrine  
   2. Ergotamine  
   3. Pseudoephedrine |

10. Describe how a dentist secures a DEA number. For what reasons would a DEA number be denied?
11. Identify drugs in each of the five DEA schedules. Which schedule has the highest risk for abuse? Which has the lowest? Which schedule is used for research only?
12. List the rules for writing prescriptions for controlled substances. What is done to discourage prescription alterations?
13. What is the purpose of triplicate prescription blanks? Which three individuals or agencies get copies?
14. How does the Canadian scheduled drugs classification system differ from its U.S. counterpart?

CONCLUSION

The dental hygienist uses knowledge of prescription writing to check prescriptions prepared by the dentist and to examine information on the prescription label. The dentist often relies on the dental hygienist for clinical applications of this knowledge. The rules for prescription writing are used to properly prepare a prescription. These regulations must be followed before a pharmacy will accept an order for medication. This is especially true for prescriptions for substances of potential abuse, which must comply with DEA regulations.

CLINICAL APPLICATION EXERCISES

Exercise 1. A new patient reports for dental hygiene care. During the medical history review, it is determined that the patient received a total hip replacement 13 months ago and has been told to have antibiotic prophylaxis prior to dental treatment. The patient says a prescription was called in to the pharmacy by the orthopaedist. What questions need to be asked to verify the proper antibiotic prophylaxis regimen? Write out the information to be included in the treatment record following the questioning of the patient.

Exercise 2. You have been asked to review a prescription written by the dentist for a controlled substance prescribed for one-time use. Which essential elements on the written prescription will you check?

Exercise 3. During the health history review, it is discovered that the patient has a history of chest pain. When the hygienist asks if any medication has been prescribed for the condition, the patient produces a bottle of nitroglycerin tablets. What information on the label will reveal if the drug is still active?